REMARKS

Entry of this amendment and the previous amendment filed on September 8, 2003 responsive to the Final Office Action of June 11, 2003, and reconsideration of the subject application in view thereof are respectfully requested.

I. Claims and Support

Claims 1 – 163 were cancelled and Claims 164 – 250 were added in the September 8, 2003 amendment, which Applicant respectfully requests be entered as part of the present Request for Continued Examination.

Applicant has amended Claim 164 herein to correct the inadvertent omission of a period (".") and inclusion of a comma ",".

For purposes of completeness, and in further support of patentability, Applicant respectfully submits the following. Support for the Claims 164-250 can be found throughout the specification. For example, support for each of the steps recited within independent Claim 164 can be found in the Figures 2A-2D of the present application, as well as in the text of the specification, some of which is explicitly referred to below by way of non-limiting example only.

More particularly, Claim 164 recites:

> A method for obtaining tissue information representative of a given tissue type, comprising the steps of:
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> (A) obtaining tissue specimens for a plurality of tissue types from a subset of a population of subjects with shared characteristics,
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> (B) imaging each of the tissue specimens,
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> (C) determining for each tissue type from the imaging in (B) a distribution of values for each of cell density, matrix density and blood vessel density,
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> (D) calculating average indices for each of the distribution of values in (C); and
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> (E) calculating dispersion indices for each of the average indices in (D),
>
> wherein the number of tissue specimens in (A) includes a sufficient number of specimens such that the indices correspond to a statistically significant representation of those indices for the population as a whole.

Step A and the "wherein" clause

Support for step (A) and the "wherein" clause may be found at page 11, lines 9-22, wherein it recites,

> "In step 50, a tissue type is selected for analysis. The tissue type corresponds to a population of tissue subject having shared characteristics. For example, the tissue type corresponds to human lung tissue, intestine tissue, cartilage tissue, etc. In addition, the tissue type may be further specified as a population of subjects having a common age bracket, race and/or gender. Thus, for example, the tissue type selected for analysis may correspond to a population of lung tissue subjects associated with Caucasian males between the ages of 18-35. The tissue type selected for analysis can correspond to either a normal or an abnormal tissue type. Moreover, in addition to human tissue, the tissue type selected for analysis may correspond to a tissue type associated with a particular plant or animal species, or a food product.
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> In step 100, a sample of specimens is selected from the population selected for analysis in step 50. The sample of specimens represents a subset of the selected population and includes a sufficient number of specimens to permit a statistically significant analysis of the population as a whole."

Step B

Support for step (B) may be found at page 17, line 12, wherein it recites,

> In step 202, each specimen from the sample selected in step 100 is imaged . . ."

Step C

Support for step (C) may be found in the specification at page 17, line 18 through page 18, line 1, at page 19, lines 3-9 and at page 20, lines 12-21, where it recites:

> In step 204, the imaging information from step 202 is analyzed in order to generate a distribution of density values associated with a particular cell type (i.e., cell type 1) in the specimens in the sample. For example, the imaging information corresponding to each imaged section of each specimen is analyzed in order to determine the density of the particular cell type (i.e., cell type 1) in the section. By performing such an analysis on each section of each specimen in the sample, a distribution of density values for the particular cell type may then be obtained.

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> In step 222, the imaging information from step 202 is analyzed in order to generate a distribution of density values associated with the matrix associated with the specimens in the sample. Here, the imaging information corresponding to each imaged section of each specimen is analyzed in order to determine the density of the matrix in the section. This matrix density in a given specimen may correspond, for example, to the density of one or more proteins in the extra-cellular matrix of the specimen. By performing such an analysis on each section of each specimen in the sample, a distribution of density values for the particular matrix is obtained.
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> In step 240, the imaging information from step 202 is analyzed in order to generate a distribution of density values associated with blood vessels in the specimens in the sample. Here, the imaging information corresponding to each imaged section of each specimen is analyzed in order to determine the density of blood vessels in the section. In performing this analysis, the blood vessels can be categorized by diameter, and the density of blood vessels in a given specimen can correspond to the density of blood vessels having one diameter. Alternatively, the density of blood vessels in a given specimen will correspond to the density of all blood vessels (regardless of their diameter) in the specimen. By performing such an analysis on each section of each specimen in the sample, a distribution of blood vessel density values is obtained.

Step D

Support for step (D) may be found in the specification at page 18, lines 18 through page 18, line 1, at page 19, lines 10-13 and at page 20, line 21 through page 21, line 1, where it recites:

> In step 206, an average cell density index representative of an average density of the particular cell type (i.e., cell type 1) in the population is calculated by taking the statistical average of the distribution of values generated in step 204. The statistical average corresponds, for example, to a mean, median or mode of the distribution of values generated in step 204.
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> In step 224, an average matrix density index representative of an average density of the particular matrix associated with the population is calculated by taking the statistical average of the distribution of values generated in step 222. The statistical average corresponds, for example, to a mean, median or mode of the distribution of values generated in step 222.

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In step 242, an average blood vessel density index representative of an average density of blood vessels (i.e., blood vessels per unit area/unit volume) in the population is calculated by taking the statistical average (e.g., mean, median or mode) of the distribution of values generated in step 240.

Step E

Support for step (E) may be found in the specification at page 18, lines 4-7, at page 19, lines 13-16 and at page 21, lines 1-3, where it recites:

> In step 208, an index of dispersion about the average density of the particular cell type (i.e., cell type 1) in the population is calculated by, for example, taking the standard deviation, standard error, or standard error of the mean of the distribution of values generated in step 204.
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> In step 226, an index of dispersion about the average density of the particular matrix associated with the population is calculated by, for example, taking the standard deviation, standard error, or standard error of the mean of the distribution of values generated in step 222.
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> In step 244, an index of dispersion about the average blood vessel density is calculated by, for example, taking the standard deviation, standard error, or standard error of the mean of the distribution of values generated in step 240.

Further, it should be noted that while the present application teaches the use of cell density, matrix density, blood vessel density and cell layer thickness, it also teaches the use of other combinations as well. See, for example, the specification at page 38, lines 13-19, wherein in recites:

> Although in the preferred embodiment discussed above, process 1000 is used to generate structural, mechanical and cell function indices for each tissue population of interest. It will be understood by those skilled in the art that all such indices need not be generated for every tissue population of interest, and that the present invention can be used for rational design without the use of all of the indices described herein. For example, for a particular tissue population, only selected ones of the structural indices

> described herein may be generated and used for the design and manufacture of engineered tissue.

Indeed, the present application explicitly teaches an embodiment directed to cell density, matrix density and blood vessel density at page 3, line 14 through page 4, line 13, wherein it recites:

> In one embodiment, the tissue specimens obtained from the subset of the population are profiled by imaging a plurality of sections of each tissue specimen from the subset. Distributions of cell density values, matrix density values and blood vessel density values associated with the plurality of sections are then determined in accordance with the results of the imaging. A cell density index representative of tissue associated with the population is determined in accordance with the distribution of cell density values, a matrix density index representative of tissue associated with the population is determined in accordance with the distribution of matrix density values, and a blood vessel density index representative of tissue associated with the population is determined in accordance with the distribution of blood vessel density values. In one example, the cell density index is determined by calculating a statistical average of the distribution of cell density values, the matrix density index is determined by calculating a statistical average of the distribution of matrix density values, and the blood vessel density index is determined by calculating a statistical average of the distribution of blood vessel density values. Each statistical average of a distribution values represents, for example, a mean, median or mode of the distribution of values.
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> In accordance with a further aspect, the structural indices used to form the engineered tissue design include a further cell density index corresponding to an index of dispersion of the distribution of cell density values, a further matrix density index corresponding to an index of dispersion of the distribution of matrix density values, and a further blood vessel density index corresponding to an index of dispersion of the distribution of blood vessel density values. Each index of dispersion of a distribution values represents, for example, a standard deviation, standard error of the mean or range of the distribution of values.

Accordingly, Applicant respectfully submits Claim 164 is fully supported by the present specification, and hence no new matter is added by Claim 164.

Applicant also submits each of Claims 165 – 250 is analogously fully supported by the application as filed. Accordingly, Applicant respectfully submits no new matter is added by any of these Claims either.

Should the Examiner find that support for a given claim step or limitation is lacking in the specification, the Examiner is requested to specifically point out that specific claim step or limitation so that Applicant may be afforded a reasonable opportunity to address the Examiner's concerns.

To the extent the Examiner believes a terminal disclaimer of the present application in view of copending Application Nos. 09/338,908 (now issued as a patent 6,581,011 on June 17, 2003) and 09/338,909 (now issued as a patent 6,611,833 on August 26, 2003) appropriate, Applicant respectfully requests the Examiner contact Applicant's undersigned attorney to further discuss the same.

II. Change of Correspondence Address

A request for change of correspondence address has been filed in this case. Applicant encloses herewith a courtesy copy of the request for the Examiner's reference.

III. Conclusion

Applicant believes that this amendment places the application in condition for immediate allowance. Reconsideration and the early issuance of a Notice of Allowance are earnestly requested.

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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